

# SPUR+\* Y-15990 Prepolymer



MARKETING BULLETIN

SILANES - ADHESIVES & SEALANTS ADDITIVES

SPUR+ Y-15990 prepolymer is an excellent candidate to consider for formulating non-isocyanate, moisture curable roof coatings and waterproof membranes. It was developed to enable the formulation of roof coating with a wide application window and excellent fully cured properties including tear, UV and water resistance.

## Key Features and Typical Benefits

- Low viscosity can enable broad formulation latitude
- Proprietary pre-polymer design yields a balance of physical and mechanical properties desirable in a roof coating formulation
- Greater hydrophobicity than conventional hybrid polymers
- Improved heat resistance

### Typical Physical Properties

Property	Value
Appearance	Colorless, clear to slightly opaque
Active Content	100%
Specific Gravity at 25 °C	0.9554 g/cm <sup>3</sup>
Viscosity at 25 °C	~2500 cP

Typical properties are average data and are not to be used as or to develop specifications.

### Typical Mechanical Properties After Cure

Property	Value
Tensile Strength at Break (psi)	600
Elongation at Break (%)	180
Modulus at 100% Extension (psi)	220
Hardness Shore A	42

Typical properties are average data and are not to be used as or to develop specifications.

The prepolymer was cured via the addition of 1% Fomrez† UL-28 & 0.5% DEMDD in a humidity chamber at 23 °C and 50% relative humidity for ten days, and then tested according to ASTM D412 for tensile properties and ASTM C661 for hardness.

## Typical Formulation in Roof Coatng

**Examples of Roof Coating Formulations**

	Formulation 1	Formulation 2	Formulation 3
SPUR <sup>+</sup> Y-15990 prepolymer	44.86	49.25	36.04
Tinuvin <sup>†</sup> 765	0.76		
Tinuvin 213	0.76		
Tinuvin 384-2		0.99	
Eversorb <sup>†</sup> 81			1.65
Jayflex <sup>†</sup> DIDP	7.64		
Acclaim <sup>†</sup> 8200			5.15
Silquest* A-137 silane	7.45		8.01
Carbital <sup>†</sup> C110S	34.5	45.31	
Omyacarb <sup>†</sup> 3 FL			44.28
DuPont Ti-Pure <sup>†</sup> R 960	2.86		
Tronox <sup>†</sup> C828	1.97	4.12	
Silquest A-1100* silane		0.47	
Silquest A-1120 silane	0.46		0.25
Silquest A-2120 silane	0.46		0.25
Silquest A-Link* 15 silane	1.58		
Silquest A-171* silane		0.2	
Fomrez <sup>†</sup> UL-59	0.25	0.23	0.25
Total	100	100	100
Viscosity of the formulation at 25 °C (cP)	~2000	~7,000	~ 5,000

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<sup>†</sup>Tinuvin is a trademark of BASF SE

<sup>†</sup>Eversorb is a trademark of Everlight Chemical Industrial Corporation

<sup>†</sup>Jayflex is a trademark of Exxon Mobil Corporation

<sup>†</sup>Acclaim is a trademark of Bayer AG

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<sup>†</sup>DuPont Ti-Pure is a trademark of E. I. du Pont de Nemours and Company

<sup>†</sup>Tronox is a trademark of Tronox LLC

<sup>†</sup>Fomrez is a trademark of Chemtura Corporation, used with permission by Galata Chemicals LLC

## Physical Properties of the Roof Coatings Formulations

	Formulation 1	Formulation 2	Formulation 3
Tensile Strength at BK (psi)	392	380	544
Elongation at BK (%)	330	266	136
Hardness Shore A	46	55	60
Tear Resistance (lbs/in)	57	58	45

Note: Test data. Actual results may vary.

### Weatherability Test of Roof Coating Formulations

The formulated roof coatings were cured in a humidity chamber at 23 °C and 50% relative humidity for seven days, and then tested according to ASTM D412, C661, and D426 for tear resistance.

Roof coating formulation 1 was selected for more extensive testing of weatherability, as it displayed a desirable balance of elongation, hardness and tear resistance and possessed the lowest viscosity.

### Weatherability Test Results of Roof Coating Formulation 1

	Tensile Strength at BK (psi)	Elongation (%)	Hardness Shore A
<b>Heat Resistance Test at 80 °C</b>			
Initial	392	330	46
After 1 week	348	242	45
After 3 weeks	319	220	45
<b>QUV-A at 50 °C (ASTM G 53)</b>			
Initial	392	330	46
After 1 week	348	246	43
After 3 weeks	363	275	40
<b>Cold Temperature (-20 to -25 °C)</b>			
The test samples are flexible after storage at -20 °C to -25 °C for four hours.			

Note: Test data. Actual results may vary.

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